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voted an annual minimum endowment of £13,500 towards the administration and needs of the university, and the chair of agriculture has been fully endowed by the newly appointed Chancellor, Sir W. Hackett. Mr. H. Gunn, who carried out similar work in South Africa with success, has been appointed organizer of the university, and is now actively engaged in making preparations for the inauguration of the institution early next year.

DR. B. E. RAY, at present of the Experiment Station and College of Agriculture, North Carolina, has accepted a position as professor of chemistry in the College of Agriculture and Mechanic Arts, Mayaguez, P. R. Special attention will be given to the development of courses in sugar chemistry.

PROFESSOR I. F. LEWIS, Ph.D. (Hopkins), of Randolph-Macon College, Ashland, Va., has accepted a call to the assistant professorship of botany at the University of Wisconsin.

MR. J. W. MERRITT, assistant in mineralogy at Northwestern University, has been appointed instructor in geology at Dartmouth College.

At University College, Reading, Dr. S. M. T. Auld, lecturer in the chemical department of the Southeastern Agricultural College at Wye, has been appointed professor of agricultural chemistry, and Mr. John Goding, of the Midland Agricultural College, has been appointed research chemist in dairying.

H. MAXWELL LEFOY has been appointed professor of entomology at the Imperial College of Science and Technology, South Kensington, London.

PROFESSOR JOHANNES FITTING, director of the State Botanical Institute at Hamburg, has been called to Bonn, as the successor of Professor Strasburger.

DISCUSSION AND CORRESPONDENCE

THE CORROSION OF IRON AND STEEL

TO THE EDITOR OF SCIENCE: In the issue of SCIENCE for April 26, 1912, appears a review of a recent book, "The Corrosion of Iron and Steel," by J. Newton Friend, Ph.D. The review is signed "William H. Walker." The

writer did not see this review at the time it was issued in SCIENCE, but his attention has just been called to it in a curious way. It appears that the review has been reprinted in pamphlet form for distribution as a commercial argument. The commercial argument is based upon the following paragraph from Professor Walker's review:

It is a matter of regret that the author has been misled, as have also the reviewer and others, by giving credence to statements and data supplied by the American Rolling Mill Co., of Middletown, Ohio, which he publishes on pages 114, 250, 276 and 351, regarding the purity of this firm's products. For example, the material said to have the analysis published on page 114, as containing 99.954 per cent. iron, and which on page 276 is proposed as a standard for pure iron on which to base a corrosion factor, *was later found by the author himself, much to his surprise, to contain .172 per cent. copper.*

In the commercial reprint referred to, the portion of the quotation from Professor Walker's review which the writer has italicized, appeared in large block letters. There is only one inference that the reader of this pamphlet could form, which is that The American Rolling Mill Co., of Middletown, Ohio, is purposely putting copper into their material for some ulterior purpose.

The writer must express himself as being surprised, to say the least, that Professor Walker should have included in a review of a scientific book such a paragraph as this, based upon an analysis of a single open market sample which was manufactured in the early days of a new industry. Professor Walker must be well aware of the situation with respect to the elimination of copper from iron in the open hearth furnace, for under date of March 16, 1911, the writer wrote to Professor Walker as follows:

In regard to the point you raise about copper in ingot iron, I can only tell you that at the time when the American Rolling Mill Co. first adopted the slogan in a trade way, of "99.94 per cent. pure," they had not established their chemical research laboratory and had paid no attention to the possible appearance of small amounts of copper in the iron, which came from the ore and selected

scrap which they, in common with other open hearth people, are obliged to use. They are now well aware that ingot iron carries normally about 0.1 per cent. of copper, although efforts are being made to reduce this, with some success. In the meantime, they are explaining that their "99.94" applies only to the usual impurities which have been discussed in relation to the manufacture of pure irons, such as carbon, manganese, sulphur, phosphorus and silicon.

Since the date of this letter, with the writer's advice, The American Rolling Mill Co. has reduced their purity guarantee to 99.84 in order to be certain to be on the right side with respect to the small unavoidable copper content. As a matter of fact, the copper content of the pure iron product now manufactured by The American Rolling Mill Co. is running normally 0.030 per cent. of copper, or better. The elimination of copper to this small percentage has been a matter that has required expert chemical engineering and very careful buying of raw material. At no time has The American Rolling Mill Co. ever introduced copper into their material except in the case of three experimental heats which were made under the supervision of the writer with the intention of determining what effect, if any, the introduction of small amounts of copper would have upon the qualities of the material. Subsequent tests showed that the introduction of copper into iron served no good purpose, and therefore the effort by The American Rolling Mill Co. to completely eliminate it has gone on with unremitting zeal.

From a commercial point of view, it is perhaps not to be wondered at that the attempt to manufacture an extremely pure iron on the same large scale of operation usual in steel manufacturing should have aroused the bitter enmity and active hostility of competing interests in this country. It is, however, certainly unfair to the efforts which have been made to establish the pure open hearth iron industry for the first time in the United States or, in fact, in the world, to have scientific literature distributed with the intent to produce the impression that the object of the manufacturer is not to produce a pure ma-

terial but to load it with another metal for an ulterior purpose. If Professor Walker had taken the trouble to inform himself in regard to this question as late as April, 1912, he would have discovered that the normal heats of the pure iron made by The American Rolling Mill Co. do not contain more than .03 per cent. of copper, for any one interested in investigations along this line is welcome to obtain his own samples directly from the mill in which the material is being manufactured.

The total elimination of copper from a highly refined iron is not an easy metallurgical problem. The charge for the open hearth furnace, whether steel or pure iron is to be made in it, is normally a mixture of pig iron and selected scrap. If the object is to refine the mixture so as to produce a commercially pure iron, very special attention has to be paid to the amount of copper which may be carried in the raw material. Open market iron of the present day is likely to carry much more copper than was formerly the case. This is largely due to the fact that the introduction of lifting magnets for loading and unloading, has made available in the metallurgical arts, machine shop turnings and other useful sources of iron. From the conservation point of view, a movement of great value has therefore been developed by the use of the lifting magnet. Since, however, copper is not in the slightest degree eliminated in the refining processes of the open hearth furnace, unusual care has to be taken in selecting raw material, to see that it is not contaminated with copper. Owing to the increased uses of copper and bronze in bearings and other parts of machinery, even so-called "heavy melting stock" is likely to carry unknown quantities of copper. Nevertheless, by careful selection of scrap and pig iron used in the processes, and by paying more for selected materials, it is possible by the exercise of continuous vigilance to keep the copper content down to a minimum point.

It is a curious fact that while The American Rolling Mill Co. has been making every effort to fight copper and keep it at the lowest possible point, a number of the steel manu-

facturers have been deliberately adding copper to their steel, because it has been found that small amounts of this element caused the metal to be more insoluble in dilute acids. Most investigators agree that an acid test should not be made the sole basis of specification where resistance to atmospheric corrosion is required in the product, but nevertheless the fact that a metal can be shown resistant to the attack of mineral acids has been in the past, and is still, used as an attractive salesmen's argument.

The writer can not help regretting that Professor Walker should have included a paragraph in a scientific review, written in such a manner that it could be reprinted and used in a commercial contest with the object of producing a false impression.

Professor Walker in the same review takes occasion to regret that Dr. Friend had recommended this pure open hearth iron as a possible standard on which to base a corrosion factor. The writer has used this material in this way for some time, and the U. S. Bureau of Standards has recently acquired a quantity of the same metal in which the sum of the total impurities present, including the gases, is less than two tenths of a per cent.

It would appear to the writer that there is such a thing as professional ethics in respect to the scientific treatment of scientific books reviewed in a scientific journal, and that such reviews should not be used to introduce false impressions to be afterwards touted about the country as "salesmen's arguments." It is an unfortunate fact that the development of this new step in metallurgy, namely, the manufacture for the first time of commercially pure iron in the open hearth furnace, on a large scale of operation, should have called forth active enmity from so many unexpected quarters in this country.

ALLERTON S. CUSHMAN

ITONIDÆ VS. CECIDOMYIIDÆ

A NOTE by Dr. E. P. Felt in SCIENCE for July 5 (p. 17) calls attention to a matter somewhat aside from the question of priority

in nomenclature, but one which should not be disregarded by zoologists who are striving to attain stability and accuracy in the designation of taxonomic groups. There is much dissension among systematic zoologists regarding the status of Meigen's 1800 names for his genera of diptera which were rechristened by him in 1804. As is well known, the latter names were in common use for a full century and many workers are not in sympathy with those who advocate the adoption of the older, long-forgotten names. Whether the generic name *Cecidomyia* should become *Itonida* depends upon our acceptance of Meigen's earlier names, but no one should countenance the appearance in print of a family name "Itonidæ" in place of the proper form Itonididæ formed from *Itonida*. The international code is very specific on this point, stating that: "The name of a family is formed by adding the ending *idæ*, the name of a subfamily by adding *inæ*, to the root of the name of its type genus."

No one has seen fit to criticize this portion of the code, so far as the writer is aware, and students of these same Diptera have previously used in many instances the carefully formed family name *Cecidomyiidæ* even though this approaches dangerously near the tabooed "unpronounceable combination" which we are warned diligently to avoid. There has been much laxity in the use of carelessly formed family names by zoologists, particularly Americans, and the writer must plead guilty with the rest.

A little care on the part of systematists will serve to eliminate all such barbaric family names, and would add to the dignity of zoological nomenclature.

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SCIENTIFIC BOOKS

American Permian Vertebrates. By SAMUEL W. WILLISTON. University of Chicago Press; Chicago, Ill. 1911. Pp. 145 with frontispiece, plates I-XXXVIII, and 32 text figures.

This work from the pen of one of the most